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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,856	02/19/2004	Yasushi Inagaki	041226-0307277	2465

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OBLON, SPIVAK, McCLELLAND, MAIER & NEUSTADT, P.C.  
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EXAMINER

DINH, TUAN T

ART UNIT PAPER NUMBER

2841

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/780,856

Applicant(s)

INAGAKI ET AL.

Examiner

Tuan T. Dinh

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) 11-14 and 16-72 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 02/04/08/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Applicant's election with traverse of Group I (claims 1-15, 17-32, 35-49, and 54-65) and Specie I (claims 1-15, and 16) in the reply filed on 05/17/05 is acknowledged. The traversal is on the ground(s) that the outstanding Restriction requirement on the Response to the Restriction and Election Species Requirements grounds that search and examination of the entire application would not place a serious burden on the examiner. This is not found persuasive because the claims of Group II (the method claims) would be classified in a different class than the claims of Group I.

Claims 11-14 do not read on Specie I, and claim 16 is drawn to a method of manufacture of a printed circuit board, which is not elected. Therefore, claim 16 is withdrawn from further consideration as being drawn to non-subject matter.

The requirement is still deemed proper and is therefore made FINAL. Claims 11-14, and 16-72 are withdrawn from further consideration as being drawn to non-elected subject matter.

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,724,638. Although the conflicting claims are not identical, they are not patentably distinct from each other because

Claim 1 of U.S. Patent 6,724,638 recites a printed circuit board (PCB), column 61, line 25 comprising all of the elements of as claimed in claim 1 of the instant application. Therefore, claim 1 of the Patent ('638) meets all of the limitations of claim 1 of the instant application.

Claims 2-6, and 10 of the Patent ('638) disclose the limitations as claimed in claims 2-6, and 10 that depend from claim 1 rejected above of the instant application.

Claim 7 of the Patent ('638) discloses the limitations as claimed in claim 9 that depend from claim 1 rejected above of the instant application.

Claim 8 of the Patent ('638) discloses the limitations as claimed in claim 7 that depend from claim 1 rejected above of the instant application.

Claim 9 of the Patent ('638) discloses the limitations as claimed in claim 8 that depend from claim 1 rejected above of the instant application.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunahara (U. S. Patent 6,153,290) in view of Ehman et al. (U. S. Patent 6,021,050), and further in view of Lauffer et al. (U. S. Patent 5,027,253).

As to claims 1, 4, and 6-10, Sunahara discloses a printed circuit board as shown in figures 1-4 constituted by alternately laminating interlayer insulating layers (9, column 5, line 30) and conductive circuits (13-18, column 5, lines 34-35) on a core substrate (1, column 5, line 29) containing a capacitor (10, column 5, line 32),

the core substrate (1), containing said capacitor (10) mounted on a surface of the PCB, is constituted by providing a first substrate (2g, 3g),

a second substrate (4g-7g) having an opening (29, 4-figure 4) for containing the capacitor and a third substrate (8g) in a multilayer manner while interposing bonding plates.

Sunahara does not disclose first, second, and third substrates made of resin material. Ehman shows multilayer printed circuit board (10) having three layers (12, 14, and 16) made of polyamide resin material (column 2, lines 45-49).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use resin layers as taught by Ehman to employ the PCB of Sunahara in order to provide a reliable and flexibility of the PCB.

Sunahara and Ehman do not teach the capacitor is located immediately below the IC chip.

Lauffer shows a multiplayer package (101-figure 2) comprising a capacitor (141) immediately located below an IC chip (235).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a capacitor is located immediately below an IC chip as taught by Lauffer to employ the package of Sunahara and Ehman for purpose of reducing wiring inductance and power supply noise of the package..

As to claims 2, 3, Sunahara discloses all of the limitations of the claimed invention, except for each of said first, second and third resin substrates having a core impregnated with a resin.

Ehman shows three layers (12, 14, and 16) made of epoxy resin impregnated. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use resin impregnated layers as taught by Ehman to employ the PCB of Sunahara in order to provide a coefficient of thermal expansion mismatch and flexure of the PCB.

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4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sunahara ('290) in view of Ehman et al. ('050), and further in view of Gorczyca et al. (U.S. Patent 5,161,093).

As to claim 15, Sunahara discloses a printed circuit board as shown in figures 1-4 constituted by alternately laminating interlayer insulating layers (9, column 5, line 30) and conductive circuits (13-18, column 5, lines 34-35) on a core substrate (1, column 5, line 29) containing a capacitor (10, column 5, line 32),

the core substrate (1), containing said capacitor (10) mounted on a surface of the PCB, is constituted by providing a first substrate (2g, 3g),

a second substrate (4g-7g) having an opening (29, 4-figure 4) for containing the capacitor and a third substrate (8g) in a multilayer manner while interposing bonding plates.

Sunahara does not disclose first, second, and third substrates made of resin material. Ehman shows multilayer printed circuit board (10) having three layers (12, 14, and 16) made of polyamide resin material (column 2, lines 45-49).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use resin layers as taught by Ehman to employ the PCB of Sunahara in order to provide a reliable and flexibility of the PCB.

Sunahara and Ehman do not teach an insulating bonding agent being lower in a CTE than the first resin substrate. Gorczyca teaches a PCB as shown in figure 3 comprising an insulating bonding agent (15) being lower in a CTE than a CTE of a core substrate (12), see column 11, lines 22-43.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a teaching of Gorczyca employed in the PCB of Sunahara and Ehman in order to provide a sufficient strength and reduce heat.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan Dinh  
August 07, 2005.